

JUN 11 2004

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Patent
Case No.: 54538US011**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

First Named Inventor: SMITH, KENNETH L.

Application No.: 09/870180

Group Art Unit: 1733

Filed: May 30, 2001

Examiner: John L. Goff II

Title: CUBE CORNER CAVITY BASED RETROREFLECTORS WITH
TRANSPARENT FILL MATERIAL**BRIEF ON APPEAL**Mail Stop Appeal Brief-Patents
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

CERTIFICATE OF TRANSMISSION	
To Fax No.: 703-872-9306	
I hereby certify that this correspondence is being facsimile transmitted to the U.S. Patent and Trademark Office on:	
June 11, 2004	<i>Michelle Murphy</i>
Date	Signed by: <i>Michelle Murphy</i>

Dear Sir:

This is an appeal from the Office Action mailed on January 15, 2004. This Brief is being filed in triplicate. The fee required under 37 CFR § 1.17(c) for the appeal should be charged to Deposit Account No. 13-3723.

REAL PARTY IN INTEREST

The real party in interest is 3M Company (formerly known as Minnesota Mining and Manufacturing Company) of St. Paul, Minnesota and its affiliate 3M Innovative Properties Company of St. Paul, Minnesota.

RELATED APPEALS AND INTERFERENCES

Appellants are unaware of any related appeals or interferences.

STATUS OF CLAIMS

Claims 1-36 were originally filed in this application. Claims 1-21 have been cancelled. Claims 22-36 remain and are pending in the application.

STATUS OF AMENDMENTS

No amendments have been filed after the final rejection.

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SUMMARY OF THE INVENTION

The present invention relates to the manufacture of a method for making a cube corner retroreflective article that has cube corner recesses. The method of the invention is summarized in the specification at page 3, line 26 through page 4, line 4.

The method of the invention provides an efficient and cost effective way to fill the cavities, thereby increasing the entrance angularity of the resulting article, without having to force the fill material into the cavities. Forcing the fill into the cavities is undesirable because it exposes the article to excessive heat, mechanical stress, and/or other processing conditions that may damage the fidelity, and hence negatively impact the performance, of the cube corner article. These features are discussed in the specification at page 3, lines 3-12.

ISSUES ON APPEAL

Has the Examiner established a prima facie case of obviousness under 35 USC 103(a) that claims 22-30 and 35 are unpatentable over Chau et al (US Patent 5,735,988) in view of Stamm (US Patent 3,712,706) and Rowland (US Patent 3,810,804)?

Has the Examiner established a prima facie case of obviousness under 35 USC 103(a) that claims 31, 33, 34 and 36 are unpatentable over Chau et al (US Patent 5,735,988) in view of Stamm (US Patent 3,712,706)?

Has the Examiner established a prima facie case of obviousness under 35 USC 103(a) that claim 32 is unpatentable over Chau et al (US Patent 5,735,988) in view of and Rowland (US Patent 3,810,804)?

GROUPING OF CLAIMS

The appealed claims will stand or fall together. No admission, however, is being made with respect to the obviousness of the subject matter of the dependent claims with respect to the subject matter of the independent claims.

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ARGUMENTS OF APPELLANTS

All of the rejections are based upon a combination of references. The Examiner must establish a prima facie case of obviousness in order to sustain this rejection. The Examiner has failed to do so in this application.

Chau et al (US Patent 5,735,988)

The Chau reference is directed to an optical element used to provide collimated back lighting to a liquid crystal display. Chau uses continuous linear peaks to reflect the maximum amount of light possible to the display. Chau desires to provide essentially total reflectance of incident light to the display. As acknowledged by the Examiner, Chau only teaches the use of an optically transparent material and is silent with regard to the use of an adhesive.

Chau does not teach retroreflective articles. To the contrary, Chau et al. only teaches specularly reflective articles. As understood by one skilled in the art, the linear structure of Chau et al. would not have the characteristic that obliquely incident incoming light would be reflected in a direction antiparallel to the incident light, or nearly so, so that an observer at or near the source of the light could detect the reflected light.

Although Chau et al. says that any type of surface topography can be used to make his reflective article, the reference provides no suggestion as to what type of surface topography is meant. This teaching is only a general statement. Thus, this statement only teaches that the type of surface topography used should be one that maintains the utility of the Chau et al. invention.

Stamm (US Patent 3,712,706)

Stamm discloses an optical reflector that utilizes cube corner cavities. The cavities are coated with a reflective material and then filled with an optically transparent material. The cavities are arranged in a close packed array. See Figure 1 and col. 2, lines 3-13, col. 3, lines 35-55, col. 5, lines 8-14 and col. 6, lines 38-45. This disclosure makes it clear that Stamm is disclosing arrays of cube corner cavities that are immediately adjacent one another. That is, adjacent cavities touch one another. They are not separated from each other.

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Rowland (US Patent 3,810,804)

Rowland discloses a retroreflective material that comprises a surface having cube corner recesses, i.e., cavities, that are filled with a molding material. A body member is applied to the filled recesses to provide a smooth surface. The other surface comprises a series of cube corner projections or peaks. A reflective coating is applied to the projections and an adhesive is applied over the reflective coating.

The Rejection of claims 22-30 and 35

This rejection fails to establish a prima facie case of obviousness. First, as noted above, the continuous linear peaks of Chau provide the maximum amount of reflected light to the backlit display. If cube corner cavities were used in place of the continuous peaks there would be a significant reduction in the amount of light reflected to the display. This is because a cube corner structure, whether a peak or a cavity, is discontinuous. The discontinuities introduce interference patterns in the reflected light that in turn reduce the amount of light incident reflected to the display. A reduction in the level of reflected light is contrary to the goal of Chau and would, therefore, not be viewed by one of skill in the art as appropriate. Consequently, the use of cube corner cavities, as suggested by the Examiner, would not be suggested by either reference.

It is also noted that the Examiner has conceded that Chau does not disclose the use of a pressure sensitive adhesive. In fact, the fill material of Chau is an "index matching material" that can be an acrylic based epoxy. This is only disclosure relating to the chemical nature of the index matching material. It should be noted that acrylic based epoxy materials would not be considered to be pressure sensitive. To the contrary, they would be considered to be materials that cure to a non-pressure sensitive state because of the epoxy functionality present. Such materials are not inherently pressure sensitive and the Examiner's assertion that they are is incorrect. This is further evidence of the shortcomings of the Chau reference.

The Examiner's assertion that it would have been obvious to use the adhesive of Rowland is also faulty. As noted above, the acrylic based epoxy index matching fluid of Chau is neither inherently pressure sensitive nor recognized as such by those of skill in the art. Consequently, there is not motivation in either reference to substitute the adhesive of Rowland for the index matching fluid taught in Chau.

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The Rejection of Claims 31, 33, 34 and 36

This rejection is faulty for the reasons recited above with regard to claims 22-30 and 35. As noted there, the combination of Chau with Stamm would negatively impact the performance of Chau and is, therefore, contrary to the teachings of Chau.

The Rejection of claim 35

This rejection is faulty for the reasons recited above with regard to claims 22-30 and 35. As noted there, the combination of Chau with Stamm would negatively impact the performance of Chau and is, therefore, contrary to the teachings of Chau.

CONCLUSION

For the foregoing reasons, appellants respectfully submit that the Examiner has erred in rejecting this application under 35 USC § 103(a). Please reverse the Examiner on all counts.

Respectfully submitted,

Date June 11, 2004

By: James V. Lilly
James V. Lilly, Reg. No.: 27,817
Telephone No.: (651) 733-1543

Office of Intellectual Property Counsel
3M Innovative Properties Company
Facsimile No.: 651-736-3833

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APPENDIX

22. A method of making a cube corner article, comprising:
providing a body layer having a structured surface that includes recessed faces defining cube corner cavities;
applying a film of reflective material at least to the recessed faces;
applying to the structured surface a flowable composition suitable for forming a transparent pressure-sensitive adhesive; and
exposing the composition to radiation sufficient to crosslink the composition after the composition has filled the cube corner cavities.
23. The method of claim 22, further comprising:
providing a first cover layer; and
laminating the first cover layer to the article.
24. The method of claim 23, wherein the second applying step applies the composition at a thickness sufficient to form a composition layer covering the recessed faces.
25. The method of claim 23, wherein the first cover layer has the flowable composition applied thereto, and the second applying step is carried out by the laminating step.
26. The method of claim 23, wherein the first cover layer comprises a release liner that does not bond to the composition.
27. The method of claim 26, further comprising:
removing the release liner;
providing a second cover layer suitable for bonding to the composition; and
laminating the second cover layer to the composition.
28. The method of claim 22, wherein the second applying step is carried out such that the flowable composition incompletely fills the cube corner cavities.

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29. The method of claim 28, further comprising:
providing a cover layer; and
laminating the cover layer to the article before the flowable composition has filled the cube corner cavities.
30. The method of claim 22, wherein the flowable composition is at least 95% polymerized during the second applying step.
31. A method of making a cube corner article, comprising:
providing a body layer having a structured surface that includes recessed faces defining cube corner cavities;
applying a film of reflective material to the recessed faces;
applying to the structured surface a radiation-curable composition suitable for bonding to the film of reflective material; and
exposing the composition to radiation sufficient to crosslink the composition after the composition has filled the cube corner cavities.
32. The method of claim 31, wherein the composition is suitable for forming a transparent pressure-sensitive adhesive.
33. The method of claim 31, further comprising:
providing a first cover layer; and
laminating the first cover layer to the composition.
34. The method of claim 31, wherein the second applying step applies the composition at a thickness sufficient to form a composition layer covering the recessed faces.
35. The method of claim 22 wherein the structured surface further includes a top surface separating the cube corner activities.

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36. The method of claim 31 wherein the structured surface further includes a top surface separating the cube corner cavities.

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FACSIMILE TRANSMITTAL FORM	Application Number	09/870180
	Filing Date	May 30, 2001
	First Named Inventor	Smith, Kenneth L.
	Art Unit	1733
	Examiner Name	John L. Goff II
Fax: 703-872-9306	Attorney Docket Number	54538US011
Total Number of Pages in This Submission:		25
Date: June 11, 2004		

ENCLOSURES (check all that apply)		
<input type="checkbox"/> Fee Transmittal Form	<input type="checkbox"/> Petition	<input type="checkbox"/> Appeal Communication to Board of Appeals and Interferences
<input type="checkbox"/> Amendment/Reply <input type="checkbox"/> After Final <input type="checkbox"/> Affidavits/Declaration(s)	<input type="checkbox"/> Petition to Convert a Provisional Application	<input checked="" type="checkbox"/> Appeal Communication to Technology Center (Appeal Notice, Brief, Reply Brief)
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<input type="checkbox"/> Response to Missing Parts/ Incomplete Application <input type="checkbox"/> Response to Missing Parts under 37 CFR § 1.52 or 1.53	<input type="checkbox"/> Request for Refund	
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